

State of California  
North Coast Regional Water Quality Control Board

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**PUBLIC  
COMMENTS & RESPONSES**

for the

Action Plan and Staff Report for the Shasta River  
Temperature and Dissolved Oxygen Total Maximum Daily Loads

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June 28, 2006

**Appendix K**



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North Coast Region  
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# TABLE OF CONTENTS

	PAGE
Section 1 - Flow Issues .....	4
Section 2 - Implementation Issues .....	20
Section 3 - Other Issues .....	27

## **RESPONSE TO PUBLIC COMMENTS**

### **Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads**

**Prepared by:  
Staff of the  
North Coast Regional Water Quality Control Board  
June 28, 2006**

This is the second of two 'Response to Public Comment' documents prepared by the North Coast Regional Water Quality Control Board (Regional Water Board) staff. The first document was prepared for the initial public review period that ended on March 24, 2006 and is included in the Staff Report for the Action Plan for the Shasta TMDLs as Appendix J. This second document, included as Appendix K to the staff report, was prepared to respond to comments made during a second public comment period, which ended June 18, 2006.

The second comment period was provided as a result of the May 17, 2006 Regional Water Board hearing on the *Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads* in Fortuna, California. At the close of the hearing, the Regional Water Board directed staff to prepare a "clean" set of documents, including the Action Plan (or Basin Plan Amendment), Resolution R1-2006-0052, and the Staff Report, that would reflect all previously highlighted revisions as well as those detailed on the errata sheet distributed during the board meeting. New revisions generated during the public hearing process and staff's editorial review were highlighted for review in each document. The documents were reposted on the Regional Water Board web site on May 26, 2006.

The Regional Water Board closed the public hearing portion on all issues/items except those included in the revised or amended language, and directed that only written public comment on the highlighted revisions to the documents would be accepted. Comments were due on June 18, 2006, ten days prior to the June 28, 2006 Regional Water Board meeting. Regional Water Board staff reviewed all of the written comments submitted during the second comment period. These comments were then partitioned into categories based on comment topic. In this document, comments are arranged within each category and include the commenters name or affiliation. Responses are provided for each comment; however, several comments may be addressed under one response if the comments were similar enough in scope. The comment categories are listed below with their page number.

Regional Water Board staff addressed all comments submitted even though some comments were outside the scope outlined by the Board at the May 17 public hearing or were resubmittals from the first comment period. The resubmittals were included in this

document as well, however, since they were already provided a response in the first ‘Response to Public Comment’ document (Appendix J), the response in this document simply references Appendix J.

Comments that addressed flow issues were separated into the 13 categories shown below on the left hand side. For these comments, the Regional Water Board staff chose to address all comments with a single response; provided after comment category 13 – Adjudication, Riparian and Groundwater Rights. This response addresses all 13 comment categories that deal with flow as it relates to water temperature and dissolved oxygen in the Shasta River watershed.

### Comment Categories

#### Flow Issues

1. Lack of Water as Form of Pollution, pg. 4
2. 45 cfs as Specific Number in Action Plan, pg. 6
3. Water Use and Flow Reporting Timeframe, pg. 8
4. Flow as Component of TMDL, pg. 10
5. Superior Court Appropriate Water Rights Forum, pg. 10
6. Reduction of Water Rights, pg. 11
7. Lack of Flow Objective for Shasta, pg. 12
8. Need for Minimum Flow Requirement, pg. 12
9. Guarantee for Dedication of Increased Flow, pg. 13
10. DWR and Watermaster Service, pg. 14
11. Groundwater Issues, pg. 14
12. Adapt AB 2121 for Shasta river, pg. 15
13. Adjudication, Riparian and Groundwater Rights, pg. 15

Response to Categories 1-13, pg. 16

#### Implementation Issues

14. Regional Water Board Commitment in Implementation, pg. 20
15. Implementation, Milestones, Monitoring and Enforcement, pg. 21
16. Tailwater Return Flows, pg. 22
17. Lake Shastina, pg. 23
18. Minor Impoundments, pg. 24
19. Urban and Suburban Runoff, pg. 24
20. Timber Harvest Activities, pg. 25
21. Grazing, pg. 26
22. Yreka WWTF, pg. 27

#### Other Issues

23. Dwinnell Dam, Fish Passage, pg. 27
24. Lack of Attainment of Beneficial Uses, pg. 28
25. Affirmative Duty and Public Trust, pg. 28
26. Adopt Plan As Is, pg. 29
27. Miscellaneous Issues, pg. 29
28. Coho Salmon Issues, pg. 31
29. Volunteerism, pg. 32
30. Anti Degradation Policy, pg. 34
31. pH, pg. 34
32. Water Temperature, pg. 34
33. Nutrients, pg. 36
34. Dissolved Oxygen, pg. 38
35. Model Results, pg. 38

## *Section 1 - Flow Issues*

### 1. Lack of Water as Form of Pollution

**California Farm Bureau Federation comment:**

In particular, Farm Bureau concurs that diversions of water are not pollutants, and are not subject to regulation through the CWA TMDL process.

**Shasta Valley Resource Conservation District comment:**

The North Coast Regional Water Board (RWB) staff defines low flows as a form of pollution in the draft Resolution. The addition of this language to the resolution appears to reflect an effort by the RWB staff to regulate water rights through water quality laws. This language is of concern to the extent it suggests that action taken by the Regional Board is designed to foster the reallocation of water away from existing beneficial uses by water diverters in the watershed, and allocate this water to other uses. The implementation of this staff recommendation could result in land being withdrawn from agricultural use and subdivided into small parcels, which would bring many adverse consequences. We believe that maintaining the separation between water quality and water quantity regulations is the correct interpretation. We request that you delete Paragraph 9 from the Board Resolution.

**Siskiyou Board of Supervisors comment:**

The North Coast Regional Water Board (RWB) staff defines low flows as a form of pollution in the draft Resolution. The addition of this language to the resolution appears to reflect an effort by the RWB staff to regulate water rights through water quality laws and as a possible attempt to change water rights law in a potentially impermissible manner. Siskiyou County does not believe that the Clean Water Act, nor the Porter-Cologne Act, supports the RWB staff's interpretation and text addition. We ask that the specific sections of these Acts be cited showing the specific authority the RWB staff believes supports the statements that "lack of water is a form of pollution", that "water quality includes water quantity", and that the RWB can address "low flows in its Basin Plan for the Division of Water Rights' and the State Water Board's consideration." Absent such authority, the RWB should not proceed in accordance with the staff recommendation in such a manner. Furthermore, even if there is some legal basis for such an approach, it is our position that it is not sound public policy to so proceed and disturb years of accepted practice and invite protracted litigation which does not serve any interests well.

**Save Our Scott and Shasta comment:**

One revision that is of concern to S.O.S.S. is a new finding in Resolution R1-2006-0052. That new finding, at paragraph 9, provides as follows:

“Lack of water is a form of pollution, a term defined by the Clean Water Act as the “man-induced alteration of the chemical, physical, biological, and radiological integrity of water.” Water quality includes water quantity and no artificial distinction can be made between them. California combines water rights and water quality functions of the state government into one

agency for this very reason. Jurisdiction over the administration of water rights lies with the Division of Water Rights and the State Water Board, however, the Regional Water Board finds it entirely appropriate to address low flows in its Basin Plan for the Division of Water Rights' and State Water Board's consideration."

**Save Our Scott and Shasta comment:**

The diversion of water is not the discharge of a "pollutant." Accordingly, the federal Environmental Protection Agency has explained that TMDLs are not an appropriate vehicle for mandating changes in diversions. EPA has explained that low flow is not a pollutant, and that the Clean Water Act does not require TMDLs for waters affected by low flows. Low flows are relevant to TMDLs, but not in the way the Regional Board is addressing them. Instead, low flows are to be considered when calculating the total pollutant load. The preamble to EPA's proposed TMDL regulations, published in the Federal Register on July 13, 2001, at 65 F.R. 43586 explains EPA's interpretation of the Clean Water Act:

EPA does not believe that flow, or lack of flow, is a pollutant as defined by CWA Section 502(6). . . . [I]t does not believe Section 303(d)(1)(C) requires that States must establish TMDLs for such waters. This is because EPA interprets Section 303(d)(1)(C) to require that TMDLs be established for "pollutants" and does not believe "low flow" is a pollutant. Section 303(d)(1)(C) provides that States shall establish TMDLs "for those pollutants" which the Administrator identifies as suitable for such calculation. . . . However, low flow is not a pollutant. It is not one of the items specifically mentioned in the list of pollutants Congress included in at section 506(6) of the CWA. Nor does it fit within the meaning of any of those terms . . . . Section 303(d) is a mechanism that requires an accounting and allocation of pollutants introduced into impaired waters (whether from point or nonpoint sources). If low flow in a river, even if man-induced, exacerbates or amplifies the impairing effect of a pollutant in that river by increasing its concentration, that factor is to be accounted for and dealt with in the TMDL by calculating and allocating the total pollutant load in light of, among other things, seasonal variations in flow.

65 Federal Register 43592-93. Accordingly, in determining the permissible amount of pollutant loading in the Shasta River, the Regional Board should calculate and allocate the total load "in light of" the existing flows.

The Regional Board should follow a different approach, one consistent with the true scope of the TMDL process and its own lack of jurisdiction to determine water rights. It should carefully avoid any implication that this proceeding will preordain what quantity of water will ultimately be dedicated to what beneficial uses. In order to make the finding in paragraph 9 a more complete statement of the law, the Regional Board should expressly acknowledge that low flow is not a pollutant, and that the TMDL process is not the appropriate regulatory forum within which to address low flows. It should expressly disavow any intention to predetermine through the TMDL process the balance to be struck among competing beneficial uses of the water in the Shasta River. In the Action Plan, the Regional Board should state that increasing flows will not be addressed as a part of

TMDL implementation, because low flow is not a pollutant, and that it is not developing a TMDL for low flows. The Action Plan itself should be amended to remove measures designed to increase flows. Instead, it should state that any such measures, if appropriate, should be developed and implemented through other processes.

**Brett Lutz comment:**

I am writing to strongly support proposed changes to the Shasta TMDL, Draft Resolution NO.1- 2006- 0052, especially item 9, which points out that lack of water should be considered a form of pollution, based on wording in the Clean Water Act.

**Don Morrill comment:**

I appreciate the Northcoast Regional Water Quality Control Board making changes to language to the effect that the Shasta River is an important part of the Klamath River system. To reduce flows in this stream is a form of water pollution.

**Mark Pringle comment:**

Language that recognizes the Shasta as an important part of the whole Klamath River and recognizes that reduced flows are a form of water pollution is essential in restoring fisheries.

**Tim McKay comment:**

Project analysis must discuss relationships between flows and the ability to achieve necessary temperature reductions in the Shasta River.

## 2. 45 cfs as Specific Number in Action Plan

**Klamath RiverKeeper comment:**

Most importantly, you need to retain the provision calling for increasing flows in the Shasta River by 150% in order to drop the river temperature 2-4 degrees. Adopting this provision will provide the incentive for all Shasta River water users to work together to conserve. It will likely also avoid the divisive water adjudication war which will surely ensue if you eliminate this provision. Restoring Shasta flows to what they were only about a decade ago will make the Shasta River once again hospitable for salmon and steelhead and it will happen immediately not in 60 years.

**George Sexton comment:**

Please adopt a clean-up plan with enforceable standards and which will increase flows in the Shasta River by 150% in order to drop the river temperature 2-4 degrees. **THIS WILL MAKE THE RIVER ONCE AGAIN HOSPITABLE FOR SALMON AND STEELHEAD.**

**Humboldt Board of Supervisors comment:**

The Board of Supervisors strongly supports the proposed changes to the Shasta River Watershed Temperature and Dissolved Oxygen Total Maximum Daily Loads (TMDL) Plan. The Board supports the proposed changes in the Plan and the linkage between flows and water temperature, and recommends an additional 45 cfs of cold water to go to the river over the life of the TMDL.

**Mark Pringle comment:**

I want to thank the NCRWQCB for including language that recognizes the important link between water flow/temperature and healthy fish populations. The Shasta TMDL describes a linkage between flows and water temperature and recommends that the RCD's come up with an additional 45 cfs of cold water to go to the river over the life of the TMDL.

**Rudy Ramp comment:**

The Shasta TMDL describes a linkage between flows and water temperature and recommends that the RCD's come up with an additional 45 cfs of cold water to go to the river over the life of the TMDL. Since the science is clear that riparian shade cannot do the job of reducing temperature without additional cold water flows, I do not want to see this recommendation removed or amended.

**Sierra Club comment:**

We support the inclusion of the 45 cfs goal for minimum instream flow during the critical fishery period.

**Shasta Valley Resource Conservation District comment:**

The Shasta Valley RCD continues to oppose the 45 cfs instream flow requirement to potentially achieve temperature reductions in the Shasta River. Since the text of the Action Plan acknowledges that any combination of measures, including increased flows, to achieve the reduction in water temperature will be acceptable, it is inappropriate to require a specific flow number.

**Siskiyou Board of Supervisors comment:**

In addition, Siskiyou County continues to oppose the 45 cfs dedicated instream flow requirement to potentially achieve temperature reductions in the Shasta River. Again, RWB staff is trying to assert water rights actions via the TMDL process under a federal law that has no water rights authority implied. Since the text of the Action Plan acknowledges that any combination of measures, including flows, will be acceptable, it is inappropriate to identify a specific flow number.

**Coast Action Group comment:**

There is sufficient comment in the file on flow needs and the flow relationship with conditions related to the other noted pollutants that points to the necessity to for the Regional Board (and SWRCB) to enforce minimum flow standards . Flow maintenance (45 cfs recommended) as part of the Action/Implementation Plan must be accomplished to remedy the noted conditions. The absence an acceptable number, as a numeric target, would make policy assuring movement towards WQS unenforceable. Lack of such numeric target, related to flow maintenance, and supporting analysis would make the TMDL and Action Implementation Plan non-compliant with the necessary legal mandates under both the CWA and State Water Code.

There is concern that the 45 cfs target minimum flow implementation will impact only certain diverters. The Division of Water Rights (SWRCB) will have to take charge of any allocation analysis (if needed) and spread the impact of reallocation over all diverters/users. There are reasonable opportunity and feasible methods to make sufficient cold water available to support the 45 cfs minimum flow requirement. The SWRCB and Division of Water Rights must address the issue of wasteful practices, and diversion license condition enforcement in allocation analysis.

The water quality compliance scenario in Chapter 6 includes a 50% increase in flow from Big Springs Creek. We strongly support that decision. However the TMDL Action/Implementation Plan must provide description of actions taken to provide for such substantial increases in flow. As discussed above, increased flows are a necessary mandate of this TMDL. There are reasonable and available solutions to solving the flow problem. Consideration should be given to associated cost factors for assisting water conservation to offset the current demand for groundwater.

### 3. Water Use and Flow Reporting Timeframe

#### **Shasta Valley Resource Conservation District comment:**

As one of the entities named as a responsible party in the achievement of the TMDL requirements, the Shasta Valley RCD feels that the short timelines attached to the Action Plan guarantees failure. It is our hope that we can proceed cooperatively with the Regional Water Board to achieve the water quality objectives. Such short timelines may mean that the goals we are trying to reach are effectively unattainable. We suggest that the Water Board staff consider using a 10 year timeline with an expanded adaptive management strategy.

#### **Siskiyou Board of Supervisors comment:**

Finally, the excessive optimism shown in the short timelines attached to the flow related provisions of this Action Plan guarantees failure and assures that, rather than proceeding cooperatively with the RWB to achieve water quality objectives, we will, instead, find ourselves proceeding down the path followed by much of the rest of California, losing more Williamson Act agricultural land and open space and with it the hope of restoring and protecting water quality. We will then find ourselves presiding over more and more 2-1/2 acre parcel subdivisions relying on ever larger quantities of ground and surface water having a grossly negative effect on achieving TMDL goals. After review of this Amendment, we suggest RWB staff use a 10 year timeline with an expanded management strategy.

#### **California Trout comment:**

Our final recommendation speaks to the time allotted to achieve certain goals, most notably flow and temperature standards. Five years is mentioned in the Action Plan as a trigger to assess actions and if flow measures “have failed to be implemented or are otherwise ineffective” a recommendation to the State Water Board may be made to seek modifications of water rights. We note the many qualifiers involved to make this happen but can see the sensitivity of the issues. We recommend that 10 years be the criteria before above actions

take place. This 10-year timeline also matches the newly revised timeline for the Department of Fish and Games Incidental Take Permit.

**Pacific Coast Federation of Fisherman’s Associations comment:**

Specific actions to achieve the minimum flows for fish are not delineated, yet immediate steps are needed now to preserve remaining salmonid stocks. We are presently experiencing relatively favorable conditions for salmonids in the ocean and in a wet on-land cycle that will likely reverse sometime between 2015 and 2025 in what is known as the Pacific Decadal Oscillation (PDO) cycle. That coho salmon and fall chinook salmon populations are at such low levels or showing serious declines during the positive cycle of the PDO is not a good sign. In order to restore Shasta River chinook and coho salmon stocks, low flow and water quality problems must be remedied by 2015 or whenever the PDO switches to less favorable conditions for salmon stocks or further extinctions are likely to occur. A population that is already severely stressed even under relatively good oceans conditions will disappear when, as is inevitable, those cyclical conditions shift for the worse.

**Coast Action Group comment:**

The RB proposes to take no action to increase flows to improve water quality for five years. This is a long time, given the stock status of Klamath River salmon. Affecting this change should take no longer than two years. Described actions to increase flows must have timelines – that will achieve the goal of lowering instream temperature 5 degrees – in a reasonable period of time. Five years for action to occur is too long. Two years would be a more reasonable time period.

**National Oceanic and Atmospheric Administration comment:**

In the Public Comments and Responses document dated May 26, 2006, beginning on page 18, the State Board comments that the implementation plan lacks specific time frames and that the regulated community needs some sort of timeline to know what is expected. We agree and recommend the State Board set a timeline to fulfill their duties in the basin.

**National Oceanic and Atmospheric Administration comment:**

NMFS also suggests that the specific implementation plan actions to be achieved by the Shasta River TMDL over five year or longer periods should include milestone goals and annual reporting of progress. This will help encourage local stakeholder participation to achieve goals that seem attainable, and also allow for adjustments in implementation to be made along the way. This would encourage water users to meet TMDL goals, rather than assume they may be ignored because the goals seem distant or unattainable.

**National Oceanic and Atmospheric Administration (NMFS) comment:**

Further, the Regional Board should require those studies needed to address flow issues in the basin within a period of 3 years using the words “will” or “shall” in the proposed basin plan amendment language in Table 4 “Shasta River Dissolved Oxygen and Temperature TMDL Implementation Actions”. Please change the existing language directed toward the State Board in the table from “may” to “will”, as in “If after five years, . . . the Regional Water Board will recommend . . .”.

This is the language used for actions assigned to the California Department of Fish and Game (CDFG), the California Department of Forestry, and the California Department of Transportation Activities (CalTrans). Directives to the State Board's Division of Water Rights should be as clear.

#### 4. Flow as Component of TMDL

**Coast Action Group comment:**

The TMDL Action/Implementation does not lay out a clear path for how such a substantial increase in flow could be achieved.

**California Trout comment:**

California Trout supports the Water Board's recommendation to improve instream flows amounts to meet TMDL temperature criteria. Indeed, there is general consensus that more cold water is needed to meet the needs of over summering coho salmon and steelhead and is a key parameter for river restoration. We read, however, that the Action Plan does not actually prescribe the increase in flow but instead recommends that strategies be developed on where those cold water flows should come from.

**Environmental Protection Information Center comment:**

EPIC is very concerned that adequate flows be provided and maintained in the Shasta River to ensure survivability of salmonids. This is critical. A substantial increase in flow is imperative to ensure survivability of dependent salmonids. The issue of flows cannot be separated from many of the limiting factors and existing conditions on the Shasta River, including elevated temperature, lack of Dissolved Oxygen, nutrient loading, and pH, which increases ammonia toxicity. The Basin Plan's anti-degradation policy must be met. The TMDL Action Plan must also ensure enforceability of standards. Monitoring is key, and should not be delayed.

**California Trout comment:**

California Trout would like to emphasize that the success of the Shasta River TMDL Action Plan depends in large on the participation of land owners and water users. We recognize the need for increased flows and are encouraged that the Water Board is seeking solutions on this issue, but without proper involvement by the Water Board and an influx of resources meeting these goals may be impossible.

**Save Our Scott and Shasta comment:**

It is important that the Regional Board consider the legal context in which it is acting, and not take action to promote consequences beyond its expertise and intended function. It should not—and cannot legally—prescribe implementation of a different flow regime to be achieved by reduced diversions under the guise of “implementing” a TMDL.

#### 5. Superior Court Appropriate Water Rights Forum

**California Farm Bureau Federation comment:**

The Board should also note that the Shasta River water rights are adjudicated by the Siskiyou County Superior Court, and as such neither the Regional Board nor the State Water Board has authority to convene a water rights proceeding under its own jurisdiction. The State Water Board's only option in the case of the Shasta River would be to file a petition to modify the existing decrees in the Superior Court for Siskiyou County. The Regional Board does not even have this option.

**Save Our Scott and Shasta comment:**

The Regional Board has neither the authority, nor sufficient information, to determine water rights. Nor have those with rights to divert the water been afforded due process concerning any modification of those rights. In its finding in paragraph 9 of Resolution R1-2006-0052, the Regional Board appropriately acknowledges that it has no jurisdiction over water rights. The Regional Board's responses to comments, at page 32, likewise acknowledge that determining water rights is not the Regional Board's function. The finding in paragraph 9 goes on, however, to justify the Regional Board's focus on water diversions on the grounds that "it entirely appropriate to address low flows in its Basin Plan for the Division of Water Rights' and State Water Board's consideration." But the Action Plan goes well beyond providing information concerning low flows for the State Board's consideration. In Table 4, the plan purports to require "water diverters" to make progress reports to the Regional Board "concerning measures taken to increase the dedicated cold water instream flow in the Shasta River by 45 cfs or alternative flow regime that achieves the same temperature reductions from May 15 to October 15." In addition, Table 4 would impose reporting and other requirements upon the operators of facilities used to exercise water rights, including Dwinnell Dam, Lake Shastina and minor impoundments. It appears that the Regional Board is attempting to impose conditions on water diverters, based on their diversion of water. That contradicts the Regional Board's disavowal of any attempt to claim jurisdiction over the exercise of water rights. The rights to use the water of the Shasta River are the subject of a court decree. The Superior Court, not the Regional Board or even the State Board, is the appropriate forum for any proceedings involving amendment or adjustment of such rights, assuming any such adjustment were appropriate.

**6. Reduction of Water Rights****California Farm Bureau Federation comment:**

Based upon the foregoing, CFBF opposes any action by the Regional Water Quality Control Board to try to adjust the water rights of farmers and ranchers in the Shasta River Watershed in order to meet temperature goals that are the subject of the Shasta River TMDL for Temperature and Dissolved Oxygen, and opposes the Board's consideration of such a fundamental policy shift in the context of an individual TMDL decision without adequate notice to the public of the nature of the action being considered. CFBF objects to the Regional Water Board addressing such a fundamental policy issue as reducing water rights through the TMDL process in the context of an individual TMDL.

**Siskiyou Board of Supervisors comment:**

The implication of the staff recommendation is that the RWB can overturn long-standing water rights law. Such actions, if taken by the RWB, we believe are unnecessary given the existing efforts, which you acknowledge, to improve and restore the Shasta River system for anadromous fish, for other species, and to retain open space for agricultural and other uses. Further, implementation of the staff recommendation could well result in land being withdrawn from agricultural pursuits, subdivided, with all the adverse consequences that may bring.

**Save Our Scott and Shasta comment:**

This language (*Resolution Finding 9*) is of concern to the extent it suggests that action taken by the Regional Board is designed to foster the reallocation of water away from existing beneficial uses by diverters in the watershed to other uses. There is, of course, a relationship between water quality and water quantity. For example, in general, the greater the quantity of water, the greater its assimilative capacity. But that relationship in itself does not justify action by the Regional Board that delves into water rights.

**7. Lack of Flow Objective for Shasta River****California Farm Bureau Federation comment:**

There is no actual flow objective established for the Shasta River, and hence there is no impairment for flow in the Shasta River. On that basis alone, the Board has no authority to impose a flow standard in the TMDL process (as implied by the desired increase in flow of 45 c.f.s.) or to try to change any water rights to achieve any such flow standards. Stated alternatively, the effort to impose a 45 c.f.s. flow increase in the TMDL process is an illegal effort to adopt a water quality standard or objective without compliance with the requirements of the Porter-Cologne Act, including but not limited to Water Code Sections 13241 and 13242.

**8. Need for Minimum Flow Requirement****Pacific Coast Federation of Fisherman's Associations comment:**

The need for a baseline minimum flow with most reaches of the Shasta River, and the importance to salmon production (and the jobs that production represents) of maintaining minimum flows even during low water years cannot be over-stated.

**National Oceanic and Atmospheric Administration comment:**

Both a minimum flow requirement and an enforcement mechanism are needed. Furthermore, the current level of water diversion and appropriation along the Shasta River provides no guarantee that water dedicated to increase instream flows will remain in the river.

**National Oceanic and Atmospheric Administration comment:**

In the same way that flow requirements are being established in the Shasta River downstream of Dwinnell Dam, flow requirements should also be established for the Shasta River upstream of Dwinnell Reservoir to Old Stage Road. In this reach, the Shasta River channel is degrading due to loss of riparian vegetation. The COLD beneficial use in this part of the watershed also needs to be protected. Furthermore, NMFS believes that maintenance of flows in both Parks Creek and the Little Shasta River should also be explored as these two tributaries to the Shasta River could support significant numbers of listed salmonids and would contribute to the full attainment of the beneficial uses in the Shasta River system.

**National Oceanic and Atmospheric Administration comment:**

NMFS, in conjunction with the CDFG, has developed instream flow guidelines that are utilized in the Coastal watersheds from the Mattole River to San Francisco. These guidelines establish bypass flow requirements and have been incorporated into water rights law via AB2121. They could be adapted for application within the Shasta watershed.

In the same manner that lack of flows are classified as pollution under the CWA (man-induced alteration of the chemical, physical, biological and radiological integrity of water), so the presence of a dam which impairs attainment of a beneficial use by blocking access to needed habitat may be classified as pollution (*i.e.*, physical alteration). The impairment of the beneficial uses for anadromous salmonids may be alleviated by accessing habitat in the watersheds above Dwinnell Dam if this habitat is still suitable for salmonids or can be restored.

## 9. Guarantee for Dedication of Increased Flow

**Humboldt Board of Supervisors comment:**

It is important water conservation practices result not in increased agricultural use but in increased water flows.

**Coast Action Group comment:**

The Regional Water Board and SWRCB should actively encourage the purchase of water rights for the purpose of maintaining adequate stream flows.

**National Oceanic and Atmospheric Administration comment:**

If instream flows are augmented; they merely enable lower priority water rights to be exercised. It is worth emphasizing that Shasta River flows are entirely allocated by adjudicated water right holders in most years. If, for example, an additional flow of 45 cfs is dedicated to the Shasta River from the Big Springs area, it would be diverted by lower priority water right holders. It should also be noted that the Shasta River is open to further diversions of water during the April 1 to October 1 period, via appropriative rights. While these water rights are junior to other existing rights, they do place even more demands on an already over-allocated water resource. Finally, riparian rights supersede both appropriative and adjudicated water rights.

**National Oceanic and Atmospheric Administration comment:**

It is possible that exercise of riparian water rights will increase in the Shasta Valley, as conversion of ranch lands to smaller homesteads continues. Such conversion often involves the exercise of riparian water rights. We agree with the Regional Board that if a water savings project can be initiated to improve instream conditions, it must contain a mechanism to guarantee that the dedicated water will stay in the stream to benefit the ecosystem.

**National Oceanic and Atmospheric Administration comment:**

To ensure enforcement of instream flow requirements, there needs to be clearly defined and non-contradictory water management authorities assigned to state agencies involved in water resource management. These authorities need to be established to define and protect instream flow dedications in the interim, while ongoing research, like the instream flow incremental methodology (IFIM), continues to scientifically identify minimum flows necessary to attain resource protection goals.

10. DWR and Watermaster Service**Sierra Club comment:**

Where the problem is the result of diminished in-stream flows harming public trust water rights, the problem must be resolved with the involvement of the DWR and an examination and resolution of the inter-related water rights. We support the specific recommendations in the revised action plan, that the Department of Water Resources coordinate the activities of a water master service to achieve the temperature goals, that the regional board make periodic reviews and that the board recommend re-examination of the terms of adjudication should it become necessary.

11. Groundwater Issues**Coast Action Group comment:**

This section of the TMDL contains good discussions of why groundwater accretions and spring inflows are important to water temperatures in the Shasta River. Groundwater accretions and spring inflows are not included in the TMDL's water quality model.

**National Oceanic and Atmospheric Administration comment:**

It is widely recognized that there will be difficulty in attaining the 45 cfs increase in Big Springs (obtained from historic flow data) surface flows because there is currently only about 22 cfs in the system following diversions. NMFS agrees with the Regional Board that the diminished Big Springs surface flow is probably affected by enhanced ground water pumping in the area which is unregulated. Ground water investigations need to be undertaken to determine the connectivity of surface and groundwater in the Pluto Caves/Big Springs area, as this area is the primary source of cold water to the Shasta River at this time.

We encourage the Regional Board to actively coordinate with the State Water Resources Control Board Division of Water Rights to conduct studies of ground water resources, particularly in this area. These studies will inform decision making processes and facilitate planning of how the impaired beneficial uses will be attained.

## 12. Adapt AB 2121 for Shasta River

### **National Oceanic and Atmospheric Administration comment:**

NMFS, in conjunction with the CDFG, has developed instream flow guidelines that are utilized in the Coastal watersheds from Mattole River to San Francisco. These guidelines establish bypass flow requirements and have been incorporated into water rights law via AB2121. They could be adopted for application within the Shasta watershed.

## 13. Adjudication, Riparian and Groundwater Rights

### **Klamath Forest Alliance comment:**

The longer the State of California delays implementing water pollution and water management laws and codes the more difficult the final reckoning will be; especially for the farmers and ranchers of the Shasta River Valley. If the Water Board does not do its job there will be action to open the Shasta River Adjudication to deal with those water pollution issues that are directly related to low flows and slow moving water.

### **Coast Action Group comment:**

Revisit adjudication to stop riparian appropriation of water purchased for instream flows and fish. If after **two years**, the Regional Board Executive Officer finds that the above-measures have failed to be implemented or are otherwise ineffective, the Regional Board will recommend that the SWRCB consider seeking modifications to the decree, conducting proceedings under the public trust doctrine, and/or conducting proceedings under the waste and unreasonable use provisions of the California Constitution and the California Water Code.

### **National Oceanic and Atmospheric Administration (NMFS) comment:**

NMFS would also like to recognize in the Regional Board's record that when the basin was adjudicated in 1932, riparian rights and groundwater pumping were not subject to the decree. No protection of instream beneficial uses was built into the decree. Similar to other proceedings, such as Mono Lake (*e.g.*, the Mono Lake hearings) and Friant Dam on the San Joaquin River (NRDC v. Rodgers), this basin may be subject to a reexamination of the impacts of water diversions on instream beneficial uses. Procuring sufficient flows to protect instream beneficial uses could avoid reopening the adjudication. The greatest likelihood of achieving an outcome that is acceptable to all will come from a process whereby all parties involved in the basin collaboratively work together to address the impacts. A willing seller system, as called for in the Shasta Watershed Restoration Plan, is a logical first start, but is far from a guaranteed process and does not seem likely to

succeed without an accounting of the impacts of riparian and groundwater users in this basin.

### Response to Comment Categories 1-13:

Similar to the first, the second public comment period yielded numerous comments on the TMDL implementation plan section that addresses cold instream flow and the resolution provision describing state jurisdiction over water quality and quantity.<sup>1</sup> Many parties wrote in support of the resolution language and flow measure. Several parties objected to the proposed resolution provision and argue that water quantity is not a matter properly addressed in the TMDL process.

The resolution language was meant to be a simple description of jurisdiction over water resources in California. Unfortunately, as currently drafted, the language appears to be fueling the mistaken notion that the TMDL is promulgating flow objectives that will bind the State Water Board and the Division of Water Rights in a water rights proceeding. This may be due in part to a recent decision by the Third District Court of Appeal, issued in February, 2006. (*State Water Resources Control Board Cases* (2006) 136 Cal.App.4<sup>th</sup>.) That case involved a challenge to the manner in which the State Water Board had been implementing the Bay-Delta Water Quality Control Plan, a state policy for water quality control. The Bay-Delta Plan included instream flow objectives and implementing language that directed the State Water Board to conduct a water right proceeding to reallocate water rights in accordance with the flow objectives in the Plan. After a subsequent water right proceeding, the State Water Board adopted a water right decision that did not strictly implement several of these objectives.

The court held that the State Water Board could not implement alternate flow objectives in lieu of flow objectives actually provided for in Water Quality Plan. (*Id.* at 77-78 (“[W]hen a water quality control plan calls for a particular flow objective to be achieved by allocating responsibility to meet that objective in a water rights proceeding, and the plan does not provide for any alternate, experimental flow objective to be met on an interim basis, the decision in a water rights proceeding must fully implement the flow objectives provided for in the plan”].) The State Water Board must fully implement the water quality plan or duly amend it. Had the water quality plan allowed more flexibility in its objectives and its implementing language, the State Water Board’s decision would likely have been upheld in its entirety. But the plan had clearly specified the water right decision “will allocate responsibility for meeting objectives.” Thus, the exact language

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<sup>1</sup> The resolution language provides: “Lack of water is a form of pollution, a term defined by the Clean Water Act as the “man-induced alteration of the chemical, physical, biological, and radiological integrity of water.” Water quality includes water quantity and no artificial distinction can be made between them. California combines water rights and water quality functions of the state government into one agency for this very reason. Jurisdiction over the administration of water rights lies with the Division of Water Rights and the State Water Board, however, the Regional Water Board finds it entirely appropriate to address low flows in its Basin Plan for the Division of Water Rights’ and State Water Board’s consideration.”

in the plan becomes extremely important. The Bay-Delta plan that included flow objectives and implementation directing a water right proceeding is perfectly valid.

Like the Bay-Delta plan, the Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen TMDLs (Shasta TMDL Action Plan) includes flow considerations as a means to achieve water quality objectives. Nevertheless, the Shasta TMDL Action Plan takes a very different approach. The Shasta TMDL Action Plan requests water diverters to participate in, and implement applicable flow-related measures that result in dedicated cold instream surface flow in the Shasta River and tributaries. This approach is consistent with other provisions in the plan that lend support to the on-going, proactive collaborative processes already taking place in the watershed. The Regional Water Board expects progress reports after two years and four years, and will reassess the success of these measures after five years. The flow measure is not a flow objective or a flow related objective. Moreover, the implementation plan contains no language directing the State Water Board to hold any water rights proceeding. The only consequence if parties do not implement the recommended flow measure is the Regional Water Board's ability to request that the State Board consider various water right actions.

To ensure that this point is patently clear, Regional Water Board staff proposes the following language to be inserted in Table 4 in the source section on flow:

This recommended flow measure does not alter or reallocate water rights in the Shasta River watershed, nor bind the State Water Board, Division of Water Rights in any water right decision.

As explained previously, there are several reasons to support the flow recommendation approach rather than promulgating flow objectives and directing a water right proceeding in the Shasta watershed at this time. First, applicable flow-related measures implemented via the CRMP or CDFG programs are collaborative based, and could therefore involve all diverters including riparian, and groundwater users. All water users contribute to low flow problems and therefore should participate in solutions, not just those subject to the decree. Second, the collaborative nature of the programs will allow flexibility for more efficient results without procedural burdens. Reopening an adjudication, or any public trust or waste and unreasonable use hearing before the State Water Board will be costly and time-consuming. Investing those resources in solutions now could yield better results. In addition, as the Chief of the Division of Water Rights has pointed out on several occasions, the Water Code does not contain a provision allowing the State Water Board to "reopen" an adjudication on its own motion. Third, more information is needed before determining flow objectives for the Shasta River that should take into consideration the greater Klamath River system. Finally, the collaborative approach allows parties to generate and implement the solution in a more creative way, assuming that parties take advantage of the opportunity.

Regional Water Board staff agrees with comments stating that the law requires the state to establish total maximum daily loads "for those *pollutants* that EPA identifies under section 1314(a)(2) suitable for such calculation." (33 U.S.C. § 1313(d)(C) (*italics*))

added).) The term “pollutant” means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged to water. (33 U.S.C. § 1362(6).) The Shasta TMDL addresses temperature or heat, which is a pollutant under federal law. “Pollution,” on the other hand, is the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water. (33 U.S.C. §1362.) Section 303(d) of the Clean Water Act requires states to identify impaired waters where effluent limits not stringent enough to implement water quality standards, and rank priority in terms of severity of *pollution* and uses of the waters. (33 U.S.C. § 1313(d).)

This is consistent with the preamble of federal TMDL regulations that explain EPA’s interpretation of the Clean Water Act cited by one commenter. EPA has previously supported TMDLs that include flow components (*see e.g.* Resolution R5-2005-0005 [Amending the Water Quality Control Plan for the Sacramento River and San Joaquin River basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel]) and has also expressed support for the current draft of the Shasta TMDL Implementation Plan. (EPA Region 9 comments on the February 7, 2006 Public Review Draft Shasta River Temperature and Dissolved Oxygen TMDLs [“The inclusion of the influence of flow on temperature is consistent with previous EPA temperature TMDLs in the North Coast”].) To any extent that the Shasta implementation plan might be inconsistent with EPA’s preamble interpretation, the EPA preamble is meant to be guidance language for federal law and does not prevent the proper application of state law. Federal law is intended to act as a minimum requirement for water quality protection and does not prevent the state from implementing more stringent control. (*See* 33 U.S.C. § 1370 [“[N]othing in this chapter shall... preclude or deny the right of any State or political subdivision thereof or interstate agency to adopt or enforce...any requirement respecting control and abatement of pollution”]; *City of Arcadia v. State Water Resources Control Bd.* (2006) 135 Cal.App.4th 1392, 1432 [EPA lacks implementation authority over non point source pollution].)

It is entirely appropriate for the Regional Water Board to consider water quantity in its water quality planning, especially when traditional controls are not adequate to achieve water quality objectives. “Water Quality Control” means the regulation of any activity or factor which may affect the quality of the waters of the state....” (Wat. Code, § 13050, subd. (i).) The Regional Water Board must consider flows in determining the assimilative capacity of the water and seasonal variation in determining the loading capacity of pollutant. The Regional Water Board has discretion to further consider flows in developing the load reductions necessary to attain standards. The goal of establishing TMDLs is to assure that water quality standards are attained and maintained. (65 Federal Register 43588.) “The TMDL program is the primary program responsible for achieving clean water where traditional controls on point sources have proven inadequate. The program is thus charged with creating plans that consider all sources and causes of impairment, and allocating responsibility for corrective measures, regardless of the sources or cause, that will attain water quality standards.” (Water Quality Control Policy

for Addressing Impaired Waters: Regulatory Structure and Options (2004).) Moreover, California law requires a program of implementation for achieving objectives, which includes a description of actions necessary for achieving water quality objectives including recommendations for appropriate action by any entity, public or private; a time schedule for actions to be taken; and monitoring to determine compliance with objectives. (Wat. Code, § 13242.) The recommended flow measure is necessary to achieve water quality standards, and is consistent with state and federal law. The non-regulatory approach is also within the Regional Water Board's discretion, and an appropriate measure to address this issue in the Shasta River watershed at this time.

Several comments argued that it is inappropriate to include the specific flow number of 45 cfs for various reasons, many relating to whether the flow provision is a recommendation or a requirement. The "45 cfs or alternative flow regime that achieves temperature reductions" language was added to express the target by which the Regional Water Board will gage progress toward increasing cold flows into the Shasta River. It was added in response to some comments requesting more definition on how the Regional Water Board will assess the progress in this area in its five-year evaluation. It is not an instream flow requirement or objective. The language explicitly allows flexibility for other flow measures that will achieve temperature reductions. In addition, the glossary includes a definition for dedicated instream flow as follows: "water remaining in the stream in a manner that the diverter, either individually or as a group, can ensure will result in water quality benefits. Temperature, length and timing are factors to consider when determining the water quality benefits of an instream flow." This definition will also help guide the Regional Board staff in evaluating progress of flow measures.

Other parties requested a more detailed description of actions to provide substantial increases in flow and suggest that the flow provision be made an enforceable mandate. As previously discussed, the Shasta TMDL Action Plan strikes the right balance for flows in the Shasta River watershed at this time. To make flow provisions mandatory, the Regional Water Board would need to promulgate flow objectives and a Basin Plan amendment directing the State Water Board to conduct a water right proceeding in order to achieve the objectives. Instead, the current plan allows time for parties to actively engage in developing their own solutions in this area, with reporting requirements to the Regional Water Board in order to evaluate progress. Parties should work closely with the CDFG programs, the RCD, and other agencies with expertise including for example the California Department of Water Resources to develop specific ideas and actions for implementation of flow measures.

The Shasta RCD and other parties requested an extension of the five-year reevaluation period to ten years to better restore and protect water quality. The commenters seem to suggest that asking parties to voluntarily participate in flow measures will lead to further subdivision of agricultural land. This is not the intent of the Shasta TMDL Action Plan flow provisions. There is substantial evidence that farmers can figure out ways to introduce cold instream flow to the Shasta River without going out of business. There are numerous management strategies available to address water quality requirements

associated with flow short of reopening the Shasta River adjudication. These include actions associated with water use efficiency, system operation, water transfers, municipal water reuse, groundwater storage/conjunctive use, agricultural land stewardship, and economic incentives (e.g., grants and loans). All of these strategies are currently being employed to solve water quality and related environmental challenges in California, and most are being employed in the Shasta River watershed. If after five years, there is evidence that progress is being made in this area, the Regional Board has discretion to allow another five years for these programs to succeed. For the same reason, Regional Board staff does not recommend changing the word “may” to “will” to allow discretion in whether making a recommendation to the State Water Board at the five-year evaluation period.

One comment suggested that the Regional Board adopt the AB2121 guidelines for the Shasta. The Division of Water Rights is in the process of preparing a State Water Board Policy for Maintaining Instream Flows in Northern California Coastal Streams. The proposed policy may affect water diversions in coastal streams in portions of Marin, Napa, Sonoma, Mendocino, and Humboldt Counties. The policy will focus on specific counties where the Division of Water Rights has a backlog of water right applications and will help in processing these applications. The Division of Water Rights has a one year deadline to promulgate this policy and it would be inappropriate at this time to add an entirely new area with a different and discrete set of issues. Moreover, as explained above, the Regional Board would allow time for collaborative-based solutions to increase flow to succeed before deciding to refer the matter to the State Water Board. It may be appropriate to add the Klamath Basin to the enforcement component of that plan in the future.

## *Section 2 - Implementation Issues*

### 14. Regional Water Board Commitment to Implementation

#### **California Trout comment:**

What is needed now more than anything in the Shasta River is coordination among regulatory parties (i.e. Department of Fish and Game and the Water Board) and resources to achieve goals set out in these proceedings. These strategies need time and resources to work and we hope that the Water Board is committed to first coordinating with existing efforts and secondly working on an implementation plan that is achievable.

**Response:** The Regional Water Board will work with other agencies to implement the Shasta River TMDL. The Action Plan relies heavily on existing efforts in the Shasta River watershed.

#### **California Trout comment:**

The Water Board must follow up the Action Plan with a strong commitment to aid in implementation.

**Response:** The Regional Water Board will commit resources to Shasta TMDL implementation.

**Tim McKay comment:**

The NCRWQCB must take a larger responsibility for restoration of the watershed's fisheries by assuring that the Shasta TMDL contains enforceable actions that address the root causes of the river's temperature problems.

**Response:** See Appendix J of the staff report, comment category 9.

## 15. Implementation Milestones, Monitoring and Enforcement

**Klamath RiverKeeper comment:**

The best course is to bite the bullet and do what is right for the river and what is just for those downstream. That means increased flows, eliminating polluted agricultural discharges and putting in place a clear time-line for dealing with Dwinnell Dam and reservoir.

**Response:** The TMDL Action Plan addresses each of these issues except for migration blockage by Dwinnell Dam. The Regional Water Board will be coordinating with the California Department of Fish and Game to mitigate the impacts of the dam. Regional Water Board staff agree that appropriate agencies should explore ways to ameliorate the fish migration barrier at Dwinnell Dam. CDFG is the primary state agency with authority to implement the Fish and Game Code and is the trustee agency for this resource. While the Regional Board has the duty to protect beneficial uses, which includes cold water fisheries, the Shasta TMDL focuses on temperature and low dissolved oxygen impacts and how those impacts affect the fisheries. Fish migration issues were not included within the scope of this planning effort. It may be appropriate to review this issue when reviewing the study results from Dwinnell Dam.

**Pacific Coast Federation of Fisherman's Associations comment:**

To implement the TMDL and comply with the Basin Plan Objectives, the Action Plan must adequately describe specific and measurable actions to achieve water quality standards, with reasonable assurance of success. Timelines with milestones and monitoring are needed to determine whether these actions are working over time.

**Coast Action Group comment:**

The Shasta TMDL Action Plan language is comprised of language that is insufficient in ability to meet Water Quality Standards due to the fact that a significant amount of language in the Action/Implementation Plan is unenforceable.

The issues of dealing the problem related to unenforceable language can be addressed in several ways (including use of Waste Discharge Reporting and/or Conditional Waivers).

Coast Action Group would like to remind the Board the actions necessary to Implement (the Action Plan) the TMDL must be adequately described, there must be reasonable assurance of success in meeting Water Quality Standards, and there must be timelines and monitoring to assure and test efficacy.

**Response:** See Appendix J of the staff report, comment category 9.

**Coast Action Group comment:**

The Shasta TMDL does not set a clear monitoring program, leaving it until a year after TMDL approval. It would seem wise to encourage continuation of specific ongoing monitoring efforts of relevant parameters before the more comprehensive plan is drafted.

**Response:** Comment noted. The Regional Water Board encourages the continuation of ongoing monitoring efforts. As noted in Chapter 9 of the staff report, the Regional Water Board will coordinate efforts with the Shasta Valley Resource Conservation District (SVRCD) and the Shasta River Coordinated Resources Management and Planning Committee (Shasta CRMP) in developing and carrying out the monitoring plan.

## 16. Tailwater Return Flows

**Coast Action Group comment:**

The most important mechanism by which tailwater returns affect DO is not included in the bullets on page 4-15. Tailwater returns are increasing nitrogen levels in the Shasta River, which can increase growth of aquatic plants. As shown in Chapter 7, respiration of aquatic plants, stimulated by high nutrient levels, is by far the largest contributor to dissolved oxygen demand in the Shasta River. While it is worthwhile to mention that tailwater returns do increase nitrogenous oxygen demand of the Shasta River, the most significant effect of tailwater on oxygen demand is to increase total nitrogen levels and stimulate aquatic plant growth.

We recognize that tail water returns are a substantial contributor to water quality problems. Tailwater returns contain nutrient pollutants. We support many of the recommendations in this section.

**Response:** The text in section 4.4.1 has been modified. See also the response provided in Appendix J of the Staff Report, section 2, individual commenter #3.

**National Oceanic and Atmospheric Administration (NMFS) comment:**

NMFS feels that addressing these tail water returns is a very high priority action and should be attempted within the first five years of the implementation plan. Large tail

water returns should be corrected first, leaving the remaining 5% - 10% of tail water (small return sites) to be corrected whenever potential benefits warrant the cost.

In addition to the potential actions mentioned in the TMDL action plan, NMFS would like to point out that solar powered aeration and/or circulation pump systems are becoming much more available and common. Their use should be explored in conjunction with the use of settling ponds in the system for addressing not only the tail water systems, but for urban and suburban runoff.

**Response:** Comment noted.

## 17. Lake Shastina

### **Coast Action Group comment:**

This section does not mention two of Lake Shastina's most important effects on oxygen demand in the Shasta River:

1. Shastina reduces peak flows, allowing organic matter and fine sediments to accumulate in the channel, contributing to oxygen demand via macrophyte respiration, and
2. Shastina increases nitrogen concentrations, stimulating aquatic plant growth and hence contributing to oxygen demand via macrophyte respiration.

Enforceable language needs to be developed to deal with the nutrient loading problem and bioaccumulation of nuisance materials (related to nutrients) in Lake Shastina.

“Initiate, complete, and submit to the Regional Water Board the results of an investigation characterizing, quantifying, and analyzing the sources of nitrogenous oxygen demanding substances contributing to low dissolved oxygen levels affecting the beneficial uses of water in Lake Shastina and to waters of the Shasta River downstream from Dwinnell Dam.

Based on the results of the investigation, the Regional Water Board shall determine appropriate implementation actions necessary to reduce the nitrogenous oxygen demand that is lowering dissolved oxygen concentrations in Lake Shastina and affected areas downstream from Dwinnell Dam”.

Initiate within two years, complete and submit to the Regional Water Board within five years, the results of an investigation characterizing, quantifying, and analyzing the sources of, and ways to reduce, nutrients and nitrogenous oxygen demanding substances contributing to low dissolved oxygen levels affecting the beneficial uses of water in Lake Shastina and to waters of the Shasta River downstream from Dwinnell Dam.

Based on the results of the investigation, the Regional Water Board shall determine appropriate implementation actions necessary to reduce the nutrients and nitrogenous oxygen demand that is lowering dissolved oxygen concentrations in Lake Shastina and affected areas downstream from Dwinnell Dam.

The Regional Water Board shall study the possibility of using pulse flows from Lake Shastina to clean out accumulated organic matter and macrophytes from the Shasta River.

**Response:** The Shasta TMDL Action Plan calls for 1) a study of water quality conditions and factors affecting water quality conditions and 2) a plan for addressing factors affecting water quality conditions both to be completed within 2 years of EPA approval of the TMDL. The plan shall begin implementation within 5 years. This is a more aggressive schedule than called for by the commenter.

**National Oceanic and Atmospheric Administration (NMFS) comment:**

The study required by the Regional Board of the Montague Water Conservation District should include potential use of a multi-level intake structure to access water that is not only oxygenated but also in an acceptable temperature range. A combination of temperature and aeration possibilities may need to be explored. Further studies are also needed to assess inputs from neighboring septic systems, and other upslope pollutant sources. Reservoir water quality improvements will foster efforts to provide fish passage through the Dwinnell complex in the future.

**Response:** Suggestions noted. The Action Plan requires a study of the pollution sources impacting water quality in Lake Shastina and will consider septic systems and other upslope pollutant sources that are significant.

## 18. Minor Impoundments

**Coast Action comment:**

Language regarding irrigation structures and stream flow impediments is sufficient.

**Response:** Comment noted.

## 19. Urban and Suburban Runoff

**National Oceanic and Atmospheric Administration (NMFS) comment:**

In regards to the urban and suburban areas, NMFS encourages the Regional Board to require that communities be developed in accordance with the stormwater treatment standards that are already in place in more urbanized areas such as Sonoma County and to which CalTrans is already subject.

**Response:** Comment noted. The Regional Water Board will work with municipalities to implement appropriate management measures for reducing pollutants in urban and suburban runoff.

## 20. Timber Harvest Activities

### **Coast Action Group comment:**

Report of the Scientific Review Panel On California Forest Practice Rules and Salmonid Habitat, Prepared for The Resources Agency of California and the National Marine Fisheries Service, comprised of a selected panel of scientists, 1999, indicates that "the Forest Practice Rules" and their administration by the California Department of Forestry "do not protect the beneficial uses of water." ""Silviculture is the leading source of impairment to water quality in the North Coast of California. Related to these water quality problems, California has a number of species, in particular salmon, that are endangered threatened or otherwise seriously at risk, due in very significant part to forestry activities that impair their spawning, breeding and rearing habitat." (Findings for the California Coastal Non-point Program and CZARA Action Plan, USEPA/NOAA, 1999) A Scientific Basis for the Prediction of Cumulative Watershed Effects, UC, Berkeley, June 2001, and finally the Final Report on Sediment Impairment and Effects on the Beneficial Uses of Elk River and Stitz, Bear, and Jordan Creeks, Concur, 2002, also support the findings noted above. All of these noted scientific reviews indicate the Forest Practice Rules, including projects related to small landowners and Non-Industrial Timber Plans, are deficient in Cumulative Impacts Analysis and can not be counted on to protect the beneficial uses of water and meet Basin Plan water quality objectives. No study has shown that smaller timberland owners and/or Non-Industrial Timber Plans have lessened impacts related to pollutant inputs from timber harvest activity

These documents, noted above, not only indicate impairment from current and historic forest practices, they provide analysis and prescriptive measures to be taken to address attainment of WQS. These documents all point to, but do not address directly, the level a disturbance precedent to the deteriorated watersheds conditions present in the Shasta River. They do indicate that level of disturbance is a major factor and needs to be addressed if we are ever going to meet WQS. And, in fact, a TMDL is a vehicle designed to (in this case) make determinations regarding level of disturbance that is acceptable and related mandatory controls to meet WQS.

**Recommendation:** That the (above mentioned) readily available information be reviewed for development of comprehensive and enforceable language to be added to the Implementation/Action Plan of the Shasta River TMDL.

The suggested use of existing permitting and enforcement tools (e.g. THP Review process, WDRs (and Waivers of same)) are not sufficient to address shortfalls that have been noted as part of this process by many agency and independent scientific review panels ( including the NCRWQCB itself).

**Response:** Regional Water Board staff concur that additional management measures beyond the minimum Forest Practice Rules are required to adequately protect the beneficial uses of waters of the state. However Regional Water Board staff believe that the general waste discharge requirements and waivers adopted by the Regional Water Board in 2004 for timber harvest activities and provisions for issuance of specific waste discharge requirements as needed provide additional and necessary regulatory oversight.

## 21. Grazing

### **Coast Action Group comment:**

Grazing and other land use not in conformance with actions that will attain WQS must be limited by enforceable language. Grazing guidelines that will recover and maintain properly functioning riparian need to be developed. Grazing Practices must provide described criteria/actions to maintain properly functioning riparian corridor and inhibit soil loss from poor grazing practices. Reasonable timelines for implementation and effective monitoring must be in place.

**Response:** Per the Shasta TMDL Action Plan, landowners involved with grazing and other range management activities are required to submit an annual report, either individually or through the Shasta CRMP, of land management practices implemented to attain water quality standards. The Shasta Valley RCD and its CRMP as well as the California Department of Fish and Game will assist landowners in implementing appropriate management measures. If these actions are found by the Regional Water Board to be ineffective at attaining water quality standards, landowners will be required to submit and implement a range management plan on a site specific as-needed basis. The Regional Water Board will also address the removal of riparian vegetation through the development of the Stream and Wetland System Protection Policy. More information about TMDL actions to address impacts of range management can be found in the Shasta TMDL Action Plan.

### **Coast Action Group comment:**

The discussion of urban and suburban runoff does not contain any language regarding planning or design, an oversight that should be corrected.

A Stormwater Runoff Plan needs to be developed and integrated in to Urban and County Planning. We recommended the addition of the following language:

“New developments should be designed to minimize stormwater runoff and maximum infiltration by minimizing impervious surface area, minimizing hydrologic connection between impervious surfaces and watercourses, and constructing stormwater retention basins. Existing developments should be retrofitted to minimize stormwater runoff.”

**Response:** The Regional Water Board will work with municipalities to develop appropriate management measures to reduce pollutants in urban and suburban runoff. The specifics of planning and design of these measures will be part of the planning process to be completed within two years of EPA adoption of the TMDL. The suggested language has been noted.

## 22. Yreka WWTF

### **National Oceanic and Atmospheric Administration (NMFS) comment:**

For the Yreka wastewater treatment facility, we encourage maximum water reuse. A primary crop in this region is alfalfa, which is considered to be salt tolerant. The City of Yreka should conduct a pilot project to determine if its wastewater could irrigate alfalfa. If it does not show any problems, the City may find it less expensive to distribute the water to local growers than to upgrade treatment to a level where it no longer impacts receiving water quality.

**Response:** Comment noted. The Regional Water Board does not have the authority to dictate the manner of compliance with water quality objectives. This suggestion should be made to the city.

## *Section 3 - Other Issues*

## 23. Dwinnell Dam and Fish Passage

### **National Oceanic and Atmospheric Administration (NMFS) comment:**

NMFS suggests that the Regional Board and all other related agencies Federal and local, explore the possibility of fish passage above Dwinnell Dam. Based upon the description in the Introduction section of the TMDL action plan, significant flows are diverted from Parks Creek into the Shasta River for storage in Lake Shastina. Along with passage through the Dwinnell complex and restoration of flows in Parks Creek, passage of salmonids to the upper Shasta River watershed via Parks Creek should be explored. NMFS is interested to learn about the current diversion structure and if it could be redesigned and properly screened to serve as a fish passage structure. This could allow fish passage not only to the slopes of Mount Eddy on Parks Creek, but closer to the cold water resources of the Mount Shasta Wilderness area.

**Response:** The Regional Water Board will coordinate with the California Department of Fish and Game to mitigate the impacts of Dwinnell Dam on salmonid migration. For additional information please see response under Category 15: Implementation Milestones, Monitoring and Enforcement.

### **National Oceanic and Atmospheric Administration (NMFS) comment:**

NMFS also recognizes that subsurface leakage of Dwinnell Reservoir water to the Shasta River is likely causing low dissolved oxygen problems. Clearly, the water quality in the reservoir needs to be improved.

**Response:** The Action Plan requires a study of the pollutant sources contributing to water quality problems in Lake Shastina. This study will consider subsurface leakage and the impact on dissolved oxygen if it is found to be significant.

#### 24. Lack of Attainment of Beneficial Uses

**National Oceanic and Atmospheric Administration (NMFS) comment:**

The Regional Board's Shasta flow temperature/dissolved oxygen model produces instream conditions suitable to sustain fisheries at the Salmon Heaven site in the Shasta Canyon, about five and one-half miles upstream from the mouth of the Shasta River. This approach does not take in account Shasta River water quality from that point down stream to the confluence of the Shasta and Klamath Rivers. The modeled criteria of: 1) 45 cfs from Big Springs; 2) riparian shade equal to 90% of site potential shade; and 3) tail water return causing a zero net increase in receiving water temperature, may not improve river conditions below Salmon Heaven. This leaves the beneficial uses unattained in this stretch of the river.

**Response:** The temperature TMDL addresses the three factors affecting Shasta River watershed stream temperature: shade, irrigation tailwater return flow, and surface water flow. Additional reductions in stream temperature downstream of Salmon Heaven can only be achieved through additional increase of dedicated cold water instream flow above the 45 cfs goal. Regional Water Board staff believe that when fully implemented, the temperature TMDL load allocations would result in compliance with the narrative temperature objective in the Shasta River.

#### 25. Affirmative Duties and Public Trust

**Environmental Protection Information Center (EPIC) comment:**

EPIC believes the Regional Board needs to secure all of its statutory and public trust authority to provide necessary protection for the Shasta, which will ensure restoration of adequate flows and development of conditions which reduce pollutants so as to ensure survivability and enhancement of fish runs.

**Response:** Comment noted.

**Tim McKay comment:**

With these concerns in mind, we are specifically asking that the NCRWQCB should exercise "an affirmative duty" in the Shasta TMDL to make protection and restoration of fisheries a priority. Shasta Valley polluters must bear an equal burden in remediating and restoring the

basin fisheries. To date it appears that the small number of polluters in Siskiyou County are above the law.

**Response:** Comment noted. Implementation of the Shasta TMDL is a Regional Water Board priority, and resources have been committed.

## 26. Adopt Plan as Is

**Brett Lutz comment:**

Please take these comments as strong support for voting this Draft Resolution into implemented action.

**Don Morrill comment:**

Please adopt the Shasta TMDL and Action Plan as is with no changes.

**Mark Pringle comment:**

I am asking the Board to adopt the Shasta TMDL and Action Plan as is with no more amendments or deletions.

**Robert Rasmussen comment:**

Adoption of the Shasta TMDL and Action Plan AS IT IS NOW WRITTEN is essential to the survival of salmon runs that sustain the northern California fishery.

**Response:** Comments noted.

## 27. Miscellaneous Issues

**Bruce Campbell comment:**

Your board deserves legal action if you keep delaying the long-overdue action plan to seriously address water quality and quantity problems in both the Shasta and Scott River watersheds. Please act decisively to address this key problem with the Klamath River ecosystem, a problem which for the past few months is getting the national attention that it deserves.

**Response:** Comments noted.

**Coast Action Group comment:**

Section 303(d) and the regulations at 40 CFR 130.7 require that "TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numerical water quality standards with seasonal variations and a margin of safety which

takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." The margin of safety can either be incorporated into conservative assumptions used to develop the TMDL or added as a separate component of the TMDL (EPA, 1991). Conservative assumptions have **not** been made in each case as a way of addressing the uncertainty and areas that are underestimated associated with the data.

There are a number of uncertainties associated with the supporting documentation, most notably in the source analysis. Given these uncertainties, additional conservative assumptions should be made regarding the amount of loading reductions that are needed to attain WQS. This approach is warranted and meets the statutory requirements that a margin of safety take into account any lack of knowledge concerning the relationship between the effluent limitations and water quality.

**Response:** Conservative assumptions were made. See sections 6.6 and 7.6 of the TMDL staff report.

**Coast Action Group comment:**

Due to the time schedule related to the Consent Decree, action must be taken in compliance with this schedule. It is recommended that either, the Regional Board (and SWRCB) adopt the currently proposed TMDL (noting deficiencies), with attached direction to staff to address specific issues needing correction. In addition, the SWRCB must take some action (not necessarily attached to the Basin Plan Amendment) to address flow maintenance issues.

**Response:** Comment noted.

**Coast Action Group comment:**

It is noted that, both, groundwater inflows, and stream shade (near stream micro-climate) are primary factors related to stream temperatures. Areas of sparse streamside vegetation are noted. However, the impacts of water use for irrigation on groundwater supply to the instream flows are not documented. It is known that there is a relationship, but the exact nature (ratio of use to instream flow) of the relationship remains to be determined. Impacts of sediment buildup on stream flow must be analyzed /assessed, with linkage to both temperature impairment and salmonid habitat conditions, to develop comprehensive pollutant loading analysis and implementation strategy.

The temperature analysis should consider the best science available for flow and riparian assessment. Studies by Bartholow, Essig, Poole, and Berman should be referenced in terms of impacts of microclimate and overstory on stream temperature. These studies indicate that air temperature and near stream microclimate to be major factor in determining instream water temperature. FEMAT suggests that the zone of riparian influence is two site potential trees - where buffering, in the form of cool air temperatures and high humidity over the stream, deteriorates rapidly under one site potential tree height protection.

The NCRWQCB based much of their scientific discussion of temperature values on Sullivan, K et al, 2000, An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria, Sustainable Ecosystem Institute. There were many other citations including Spence et al (a major compendium of relevant science - see quotes below), Hines and Ambrose, etc..

Temperature studies from Mendocino (Hines and Ambrose, 2000 - which included work on Big and Ten Mile Rivers) and Humboldt (Welsh et. al) counties that examined salmonid habitat utilization and temperature relationships. There are some more current papers out on temperature effects on salmonids, not considered. One by Essig (1998) on the background effects of temperature on salmonids. Additional information on temperature affects on salmonids can be found in An Ecosystem Approach to Salmonid Conservation, B. Spence, G. Lomnickey, R. Hughes, R. Novitzki, for Management Technology (MANTECH), 1996.

**Response:** The salmonid biological requirements used in the Shasta TMDL analysis are based on USEPA Region 10 reports, as noted and cited in the staff report. The Regional Water Board performed a source analysis for impacts to water temperature and discussed, in the staff's best professional judgement, the main causes of the impairment. Loads were allocated based on the source analysis and modeling of the Shasta River temperature dynamics. The Action Plan was developed based on the technical analysis to address impacts to water temperature. While there are always more data that can be used to further the technical analysis, the Regional Water Board believes that the current assessment is sufficient to fulfill the TMDL mandate and develop an Action Plan that is effective at addressing the impairments. In the future, as more data is collected and analyzed, it may be incorporated into analysis and the TMDL may be refined. The commentor's suggestions have been noted.

## 28. Coho Salmon Issues

### **Pacific Coast Federation of Fisherman's Associations comment:**

Coho spawning is well known in the Shasta (in fact, the Shasta represents some of the most historically important coho spawning areas), yet the TMDL Action Plan proposal does not specifically focus protection or restoration on reaches or tributaries that presently harbor ESA-listed coho or which are important for coho recovery.

**Response:** The Shasta TMDL Action Plan is focused on attaining water quality standards for temperature and dissolved oxygen throughout the Shasta River watershed including those reaches and tributaries that support coho salmon. The Shasta TMDL Action Plan is not focused on restoring coho in general; rather it is aimed specifically at restoring water temperatures and dissolved oxygen levels that meet the biological needs of all salmonid species. The Action Plan addresses salmonid species because their related beneficial uses are the most sensitive to temperature and dissolved oxygen impairment in the Shasta River watershed.

**Tim McKay comment:**

If the Shasta TMDL results in continued harm to listed Coho salmon shouldn't a consultation with the National Marine Fisheries Service [or NOAA Fisheries] be required?

**Response:** As part of the TMDL development process, staff of the Regional Board and the US EPA have regularly consulted with US Fish and Wildlife Service and National Marine Fisheries Service with respect to listed species.

29. Volunteerism**Shasta Valley Resource Conservation District comment:**

The Shasta Valley RCD has been actively working with landowners in the Shasta Valley to improve and restore the Shasta River system for anadromous fish and other wildlife, and to retain open space for agriculture and other uses. You have acknowledged these efforts and we hope that the Water Board staff will consider the concerns we have expressed. Continued voluntary efforts by landowners in the Shasta Valley is the vital component to continuing the improvements in the Shasta River.

**Response:** Comment noted.

**Coast Action Group comment:**

Implementation relies heavily on voluntary measures. RB language stressing the ability to follow up with enforcement helps, yet there is no assurance of compliance and/or description of actions to take place.

The RB and SWRCB are required to take actions to attain WQS ( water quality objectives and beneficial protection and restoration) The final TMDL Action/Implementation plan must assure movement towards attainment of WQS by adoption of the *Shasta TMDL Action/Implementation Plan* in to the *Basin Plan* (NCRWQCB, 2001). If there are multiple ways to meet the objectives, we support giving landowners the flexibility to decide how they want to meet those objectives. For example, if other regulatory and policy processes such as the *Shasta Incidental Take Permit* (SCROD, In Draft), *Coho Recovery Plan* (CDFG, 2004), and Timber Harvest Plans will result in the attainment of water quality objectives, then further regulation by the RB is not necessary.

Duplicative and overlapping regulation benefits no one. Unfortunately, these other processes often rely on voluntary measures that neither guarantee that water quality problems will be remedied nor that TMDL objectives will be achieved. When other policy approaches and voluntary landowner actions fail to achieve the TMDL objectives, then the RB must use its considerable regulatory and enforcement authority to take necessary actions to ensure results.

Reliance on voluntary actions to solve the flow problem is not sufficient remedy (nor does it meet CEQA, TMDL, and Water Code mandates).

While many of the ideas proposed in the *Coho Recovery Plan* are positive, they are also voluntary. It is important for the Regional Water Board to remember that it has a responsibility to protect public trust resources and ensure results. If voluntary measures work, that would be great, but they are often insufficient and further action is required.

The State Non-Point Source Policy mandates regulation of pollutants by use of Waste Discharge Permits, Conditional Waivers (related to the WDRs), and/or Prohibitions. The word voluntary is not in the lexicon of the State Non-Point Source Policy. Voluntary Implementation proposal should be considered, if and only if, such proposal meets the standards necessary under Section 12342 of the State Water Code, with adequate descriptive language for the proposed actions that includes performance standards and timelines, with performance monitoring to be accomplished. TMDLs should nexus with and be in conformance with State NPS Policy.

There are aspects of the implementation plan that are actions yet to be described, and requests for actions where the implementation of same are totally voluntary. This renders aspects of the Action/Implementation Plan unenforceable.

State water law says that an implementation plan (Water Quality Control Plan) must contain a description of the nature of specific actions that are needed to achieve the water quality objectives, a time schedule, and a plan for monitoring compliance (State Water Code Section 13242). As a Water Quality Control Plan, the Implementation/ Action Plan must be adopted into the Basin Plan.

Reliance on unenforceable language is inconsistent with Cal Water Code - unless voluntary actions submitted as planning documents to be approved by the Regional Board are found to be equal to or better than enforceable criteria capable of meeting Water Quality Standards. Such voluntary actions (meeting Cal Water Code) should be held open as options for attaining targets and to meet Water Quality Standards.

The Implementation /Action Plan lacks linkage and consideration with what is, or should be, the matrix of near-stream and in-stream desired conditions - or - linkage and explanation of how such voluntary actions will, or are capable, of attaining these near-stream and in-stream desired conditions or Water Quality Standards.

**Response:** See Comment Category 9 ‘Volunteerism and Timelines’ in Appendix J of the staff report. With regard to desired conditions, the Regional Water Board is in the process of developing the Stream and Wetland System Protection Policy that will address desired conditions in the riparian zone. In addition, a desired condition matrix is being developed for sediment condition indicators.

### 30. Anti Degradation Policy

**Coast Action Group comment:**

The Basin Plan has a non-degradation objective - that is currently being violated. Temperature sensitive habitat is being degraded. Flows are a controllable issue and inputs of additional pollutants (in this case elevated temperature) are not permissible.

Habitat is currently in a degraded condition. A flows target to lower instream temperature by 5 degrees is necessary to meet WQS. Additional stream shade is important. Stream shade alone can not reach the stated target. Affects from stream shade recruitment will not be seen for at least 40 years. Note: Maintenance of the instream flow target is supported in the Peer Review in the file by Dr. Coutant.

**Response:** The proposed Action Plan will not result in degradation to the Shasta River.

### 31. pH

**Coast Action Group comment:**

“Narrative and Numeric Water Quality Objectives applicable to the Shasta River basin TMDLs” should also include the *Basin Plan* water quality objectives for pH in the Shasta River. The Shasta River is not officially listed as pH impaired, summer pH values in mainstem Shasta River are extremely high (>9.5), and are unequivocally related to nutrients and DO. Analysis of pH data is a valuable tool to help understand the spatial and temporal dynamics of DO and nutrient impairment (Kier and Associates 2006).

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

The pollutant pH should also be specifically mentioned in this sentence on page 2-24, “In this context for the Shasta River TMDL, Regional Board staff define nuisance aquatic growth as that which contributes to violation of numeric water quality objectives (particularly dissolved oxygen) or adversely affects beneficial uses.”

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

### 32. Water Temperature

**Coast Action Group comment:**

The TMDL states “Weekly maximum temperatures exceed the spawning, incubation, and emergence threshold (i.e. MWMT of 13°C) at all Shasta River reaches from April

through June, and during the second half of September.” Data shows temperatures are above 13°C until mid-October, not September. This should be corrected.

**Response:** This has been corrected in the staff report.

**Coast Action Group comment:**

On page 3-6, there is discussion of a reach at river mile 37.3 shown in Figure 3.2 where the riparian vegetation noticeably changes from sparsely vegetated to densely vegetated, coincident with a 4 degree drop in temperature. It seems unlikely that riparian vegetation would rapidly cool temperatures by 4 degrees C. As Dr. Coutant points out in the peer-review (Appendix I) another possibility is that hyporheic exchange cooled the water.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

Temperature analysis in this TMDL should have a good reference background of Targets for desired conditions.

Temperature analysis in this TMDL should have a good scientific reference to, both Targets, and affects of elevated temperatures on salmonids. **See - EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards, 2003, and other temperature science noted in the listing fact sheets.**

Most of the monitoring data and analysis presented indicating existing temperature regimes (in MWAT) far in excess of conditions suitable for salmonids in various life stages. A matrix of acceptable Targets should be developed for reaches of the watershed indication the acceptable MWAT range and percent of habit that should fall into that range. A Target of 16.7 C (absence line for coho) is a logical goal. It should be determined what percentage of the watershed should meet this target to address beneficial use issue.

Targets should also be developed for other factors that influence elevated temperature loading (i.e. Percent shaded area appropriate for forested areas, percent shaded area appropriate for non-forested areas, minimum or acceptable low flow targets for various reaches of the drainage, etc.). These Targets should be the basis for the development of enforceable implementation policy.

**Response:** The TMDL for the Shasta River watershed already contains the elements suggested by the commenter. The TMDL staff report includes a discussion of the effects of elevated temperatures on salmonids (2.3.1) and uses these temperature ‘targets’ as the basis for the water quality compliance scenario. The TMDL then assigns load allocations in the form of shade targets for the Shasta River watershed, reduced heat loading from irrigation return flows, and increased flows of cold water necessary to reach compliance.

**Coast Action Group comment:**

The Shasta TMDL does not address the October 1 deadline for shutting off stock water and increasing stream flows for fish passage. Snyder (1931) noted that fall Chinook salmon entered the Shasta River in September. Fish now delay their migration until after October 1 because of lack of sufficient flow and associated warm water temperatures. This delayed pattern of entry into the Shasta River is manifest in both wet and dry years. Fall chinook forced to sit for weeks in stressful Klamath River conditions likely have reduced fecundity. This intensive selection pressure likely selects for later run timing.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

The TMDL should consider the potential of hyporheic function. Connection of surface water to these sub-surface waters is recognized as having a potential cooling influence (Poole and Berman, 2001; U.S. EPA 2003). While magnitude and distribution of this effect in the Shasta River is unknown, it may be significant (and likely the cause of the cooling described in section 3.3.2 and shown in Figure 3.2). As Dr. Coutant mentioned in his review, the model could potentially simulate this effect: As noted by Dr. Coutant, failing to include this mechanism would lead to incorrect findings.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

### 33. Nutrients

**Coast Action Group comment:**

The nutrient concentration required to cause impairment in a stream varies widely according to many factors, thus the more specific the analysis the better. Thus, we cannot see any justification for the TMDL to use the numbers presented Dodds et al. (1998) derived from across North America and New Zealand, rather than the USEPA (2002) criteria derived from data in Nutrient Ecoregion II (Western Forested Mountains) of the western United States. We recommend that both Dodds et al. (1998) and USEPA (2002) remain in the literature review presented in 2.5.1, but that when analyzing Shasta River nutrient data in section 2.5.2 (Shasta River Watershed Nutrient Conditions), the USEPA (2002) recommended criteria should be used instead.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

Consideration of total Phosphorus inputs has left out contributions from land use.

**Response:** Regional Water Board staff do not understand this comment. Section 7.2.1 does address the effect of phosphorus on algal productivity. Action Plan controls targeting nitrogenous oxygen demand reductions from Dwinnell Dam, Yreka Creek, and irrigation tailwater return flows, will also control phosphorus. See also response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

Consideration of N inputs and complex relationships are not considered in sufficient depth, except to understand that there is a problem. The real problem with nutrient sources, which the TMDL repeatedly overlooks, is the total amount of nitrogen (in all forms) contained in those nutrients sources and its stimulation of aquatic plant growth. This occurs throughout the Staff Report and the *Basin Plan* amendment language, and should be corrected.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

The TMDL should also recognize that the form of nitrogen is also important (as inorganic forms of nitrogen such as ammonia and nitrate are available to immediately stimulate plant growth). The statement “Total nitrogen values in springs are generally within the mesotrophic boundary” (p 2-30) is inconsistent with the rest of the nutrient discussion. The statement should be changed to “Total nitrogen values in springs are several times higher than the USEPA (2002) recommended ecoregional criteria.”

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

Little evidence is provided to support the statement that “Maximum total nitrogen levels in the mainstem Shasta River increase in a downstream direction.” Table 2.8 provides total nitrogen data on the Shasta River near the headwaters, Shasta River above Dwinnell, and then lumps all mainstem sites below that as “Shasta River below Dwinnell Dam.” To support that statement, the sites below Dwinnell Dam should be analyzed individually. Appendix B of the TMDL contains USGS and RWB data from 2002-2003 indicating that the patterns at sites below Dwinnell Dam are complex and that analysis of the data is confounded due to the use of a laboratory with inadequate detection limits for Kjeldahl nitrogen.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

Discussions of Dwinnell Reservoir in Section 2.5.2 note increased nutrients as compared to reaches of the Shasta River above, but do not mention the role of the nitrogen-fixing blue green algae *Anabaena flos-aquae* as one of the sources of nutrient pollution (though it is later in the document in Chapter 4). *Anabaena flos-aquae* is correctly noted in the text to be a producer of anatoxins.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

**Coast Action Group comment:**

The TMDL is lacking in linkage and analysis (and modeling) regarding the relationship of flows and their effects on pollutant levels – or how increased flows might limit the effects of N, P, and pH conditions.

**Response:** Comment noted. The analysis does evaluate the linkage between flow on dissolved oxygen and temperature, the parameters for which the TMDL is developed. Regional Water Board staff agree that additional modeling analysis of the relationship between flows and nutrients and pH is of interest, but contend that this analysis is beyond the scope of this TMDL.

34. Dissolved Oxygen**Coast Action Group comment:**

This section does not mention a third important way in which flow affects dissolved oxygen. We recommend that the following text be added to the last sentence in this section (after "...caused by photosynthesis and respiration.") on page 4-21:

Flow can affect dissolved oxygen through its effects on water temperature. For instance, larger volumes of water have a higher thermal mass and are more resistant to heating and cooling. So if a large volume of water is cool (i.e. from a spring-fed creek such as Big Springs) it can travel downstream and retain its low temperature. Low temperatures allow water to hold more dissolved oxygen. Through this mechanism, flow can affect dissolved oxygen.

**Response:** See response provided in Appendix J of the staff report, section 2, individual commenter #3.

35. Model Results**National Oceanic and Atmospheric Administration (NMFS) comment:**

The model results are based on one year of fish survey information from the Shasta River Canyon. Because of large annual variability, survey information over a longer time period is needed to better understand fish production in the entire Shasta Canyon area, and to calibrate the model.

**Response:** The Shasta River temperature and dissolved oxygen model was calibrated/validated for the summer months 2002. Beneficial use support was evaluated for the August 2002 model scenario results based on readily available information about fish in the watershed. Regional Water Board staff agree there is large annual variability in fish survey information, and encourage on-going evaluation of TMDL compliance with respect to beneficial use support as more information becomes available.